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The Traditional Motorcycle Officer's Uniform: Is There a Safer Alternative?

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ABSTRACT

The purpose of this research is to investigate whether or not the current uniform is too antiquated to provide the optimum level of protection currently available for motorcycle officers. The research will also consider whether or not the utilization of a newer uniform would be safer, while still being financially feasible. It is anticipated that with little or no budgetary impact, motorcycle officer safety levels can be upgraded in order to better protect the motorcycle officer from injury. Also, other departments can use this research in order to implement a new, more modern motorcycle uniform, which could reduce the seriousness of injuries incurred in some motorcycle related accidents. The method of inquiry used includes a printed survey consisting of ten questions and additional research considering the issue of motorcycle crashes and accompanying injuries. The majority of agencies were found to use and wear antiquated uniforms that led to the incidence of minor injuries to the lower legs. Additionally, the findings reflected that while police motorcycle training seeks to eliminate (and very well may deter) accidents, officers still need safety equipment to reduce the likelihood of injuries when an accident does occur. This study has demonstrated that with little or no budgetary impact, motorcycle officer safety levels can be feasibly upgraded in order to better protect the motorcycle officer from injury.

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INTRODUCTION

The widespread use of motorcycles in police work can be traced back to the beginning of the 20th century. Motorcycles first became popular alternatives to conventional police cars during the prohibition era. Police motorcycles were fast enough to pursue cars and had the added advantage of having greater mobility over rough terrain. Today, police motorcycle units are utilized for their ability to maneuver in and around high traffic areas and are used for traffic enforcement, accident investigation and other specialized duties where increased mobility may be needed.

The development of a motorcycle unit calls for a policy regulating the appropriate uniform, as well as other safety issues that must be addressed with regard to the inherent dangers associated with motorcycling. Police departments now find themselves faced with the decision to use traditional police motorcycle uniforms or more modern, but less customary alternatives. The classic uniform, consisting of leather horse riding boots, double layer motorcycle breaches, standard patrol issue uniform shirts, a winter motorcycle jacket made of leather, and finally a ¾ shell motorcycle helmet are often chosen. These items are frequently selected for purchase by police agencies in Texas largely due to the fact they are considered to be 'the standard' uniform for motorcycle officers, not only in the State of Texas, but across the majority of the United States.

Training for motorcycle officers is largely centered on accident avoidance. This approach has certainly saved many motorcycle officers from injury or reduced the severity of any injuries sustained, as demonstrated by the Hurt Report and Motorcycle Safety Foundation statistics and findings. However, one must consider whether or not there is more that can be done to further protect the motorcycle officer from injury in the event of an accident. Current

technological advancements (largely originating from the motorcycle racing community) in protective gear have advanced to the point that the issue of adequate protection for motorcycle officers, using the current traditional uniform, must be examined more closely.

The purpose of this research is to investigate whether or not the current uniform is too antiquated to provide the optimum level of protection currently available for motorcycle officers. The research will also consider whether or not the utilization of a newer uniform would be safer, while still being financially feasible. Additionally, it must be stated that the uniform needs to have the ability to provide safety to the rider, while still allowing the officer to carry out his/her duties as a police officer. This means the uniform must allow for the wearing and use of a police duty belt with holster and weapon and must also accommodate various weather conditions, allowing for a fair amount of comfort in these conditions. The research will include data from the Hurt Report, the National Highway Transportation and Safety Administration (NHTSA), the Motorcycle Safety Foundation (MSF) and the MAIDS report (Motorcycle Accidents in Depth Study). It will also include comparison data from various manufacturers of safety equipment. A research survey sample from agencies utilizing motorcycle officers will be conducted to see what practices are currently in place regarding uniform safety equipment, as well as past injury experience.

It is anticipated that with little or no budgetary impact, motorcycle officer safety levels can be upgraded in order to better protect the motorcycle officer from injury. The only caveat to this finding may hinge on any given police department's willingness to depart from the traditional appearance of the motorcycle officer, which has become embedded into western police culture since the turn of the 20th century. Concluding the research findings, if it is found that a motorcycle officer's injury severity could be lessened by wearing an improved uniform,

any police department who has a motorcycle unit could then use this research in order to implement a new, more modern motorcycle uniform. Ideally, this could reduce the seriousness of injury in some motorcycle involved accidents.

REVIEW OF LITERATURE

Literature in the area of motorcycle safety is fairly abundant. However, there exists little scientific study in the area. The majority of literature on the topic is largely comprised of magazine articles, emphasizing popularly accepted practices dealing with the fashion and style of a motorcycle uniform, as opposed to the paramount concern of abating injury. On the contrary, safety (which may or may not be present in a given product) related to apparel is viewed as a side benefit. Additionally, motorcycle safety in western society concentrates more on the proper way to ride a motorcycle, as opposed to things that can be done to prevent injury in the event of an accident. This is demonstrated by Hurt's finding, stating that only 40% of riders involved in accidents wore helmets, even though the wearing of a motorcycle helmet is the single most important factor influencing the reduction of the significance of head injuries to riders once an accident has occurred (Hurt, Ouellet, & Thom, 1981). Accident avoidance is a critical element to stress when riding, but it can easily be argued that not all accidents are avoidable. In fact, in reviewing 3,600 motorcycle accidents in the area of Las Angeles, California, it was found that the average time a motorcyclist has to complete accident avoidance maneuvers is less than two seconds (Hurt, Ouellet, & Thom, 1981). In addition, Hurt's research shows that in half of the 3,600 accidents, injuries to the riders' ankle, foot, lower leg, knee, thigh-upper and legs were present. Hurt went on to conclude that the use of heavy boots, jackets and gloves were found to be effective in preventing, or reducing, the severity of these injuries (Hurt, Ouellet, & Thom,

1981). Therefore, one must consider rider apparel as an aspect of motorcycle safety in conjunction with accident avoidance techniques.

In contrast to Hurt's findings, a more recent study conducted in Europe (specifically, combined data from France, Germany, Italy, Spain, and the Netherlands) examined 921 motorcycle and scooter accidents, including 103 of which were fatalities. European researchers found a helmet usage of 90.4%. There are parallels between the two studies as well. For instance, in the MAIDS research, funded by the Association of European Motorcycle Manufacturers, it was found that 55.7% of rider's injuries were to riders' and passengers' arms and legs. The injuries noted were found to be of a minor nature overall. Nevertheless, it is noted that proper protective clothing effectively reduced these types of injuries. Finally, it was recorded in the European "Motorcycle Accidents in Depth Study" that a lack of time to react was often cited as a causative factor in the accident ("MAIDS,"2004). The MAIDS (2004) report also examines specific types of footwear, gloves, pants, jackets and helmets. While the study does correlate the use of protective gear to reductions in both the number and severity of injury, as well as documenting the style and/or makeup of the riders' gear, it does not specifically relate the level of injury to the level of protection ("MAIDS,"2004).

Government publications also echo the findings of the MAIDS and Hurt reports. The National Highway and Transportation Safety Administration (NHTSA) cites studies like the Hurt report that testify that the head, arms and legs are most often injured in a crash (NHTSA, 1999). NHTSA (1999) recommends using helmets, some form of eye protection, jackets with long sleeves and trousers (made from sturdy, durable material that provides protection from abrasion), gloves to cover the hands, and leather footwear. They also recommend reflective materials to increase visibility (NHTSA, 1999).

The Motorcycle Safety Foundation (MSF) also uses the lessons learned from the Hurt report to outline suggested motorcycle safety gear. Not only does the MSF say that the helmet is the most important safety item, but they go further by suggesting that full face helmets will lessen wind noise, stop flying objects like bugs and rocks from causing facial injury, provide protection from the elements, and therefore reduce rider fatigue. The MSF also recognizes the need for over-the-ankle boots to protect against burns from the motorcycle's engine and exhaust pipes, to lessen the impact from flying road debris and to protect the foot and ankle in the event of a crash. The Foundation also extols the benefits of gloves to improve grip, prevent blisters and protect the hand in the even of an accident (MSF, 2001). Finally, the Motorcycle Safety Foundation points out that even in warm weather, jackets made from light, abrasion resistant fabrics can be safer than no jacket at all. Vents with flaps can allow air to circulate around the body, having a cooling effect without constant wind exposure that can lead to hypothermia, which can then cause fatigue, loss of concentration and fine muscle coordination (MSF, 2001).

In order to assess the level of efficacy of various types of protective gear for motorcycle riders, one must compare and contrast some of the various manufacturers' equipment. Many police departments currently use the world's most popular patrol boot made by Dehner Inc. Dehner boots are designed for motor patrol and mounted officers (Dehner Inc., 2006). While the boots are hand made and are of exceptional quality, they are also expensive; costing between $500.00 and $700.00. There are no aspects of the boot that specifically relate to safety or protection for the foot or ankle area in the event of a crash outside of the fact that they are constructed of heavy grain leather and cover the foot and leg to the bottom of the knee. The boot features a non-slip sole for grip in various weather conditions on a variety of surfaces.

In comparison, Sidi brand motorcycle boots are a high-end boot designed specifically to meet the needs of motorcycle riders. Sidi boots are Italian made with a manufacturer's suggested retail price of $220.00. The boot has several design features related specifically to the purpose of impact protection. The Strada Tepor Evo model has a shin deflector with internal padding that is designed to protect the Tibia and Fibula from impact shocks. The ankle area of the boot is padded with foam for impact resistance and there are reflective inserts on the back area for increased visibility. The boot also has sweat wicking material on the inside to keep it from becoming wet with sweat in hot weather, and is available in a waterproof model to keep the boot as dry as possible in the rain. The sole is non-slip and there is padding in the bottom of the foot with a removable arch support for added comfort (Sidi, 2006). It should be noted that there are several comparable models from other manufacturers, but for the purposes of this research, comparisons to traditional boots, versus newer boots, might result in similar findings and features. This statement is true of other examined products associated with this research as well.

The traditional uniform pant worn by motorcycle officers consists of the same material used by patrol officers. Some of the major differences are that the pants are custom fitted to the rider; they contain double layered material in the seat and knee of the pant and are tapered to fit inside the boot. The pants generally cost around $134.00 to $225.00 each and are 100% wool or can be a wool blend (Quartermaster, 2006).

Other options for pants include models like Firstgear's Mesh-Tex pant (Firstgear, 2006). The pant is constructed from ballistic nylon mesh with 500 denier Hypertex material specifically designed for abrasion resistance. The knee of the pant is lined with foam armour for abrasion and impact resistance. The knee is also equipped with elastic on the backside of the joint for increased mobility. The hip of the pant is padded as well. Finally, the pant has a zipper system

so that motorcycle jackets can be attached to the pant so that in the event of a crash the pant will not roll down nor will the jacket ride up to avoid exposing skin (Firstgear, 2006).

Police motorcycle jackets were probably the first functional, purpose built protection for motorcycle officers that was not borrowed from the world of equestrian riding. Although the original design dates back to the late 1940s, influence in the style of the jacket with the button down collar, built-in waist belt and zippered sleeves can still be seen in motorcycle jackets being produced today. They are often made from heavy grain leather for abrasion resistance. This makes the jacket functional, but can also make it heavy to wear and too hot to keep on in warmer climates or areas like Texas where the winter is often mild, short or both. Higher end leather jackets will often times have a removable liner. These jackets vary widely in price and quality, but generally one for duty purposes can be found for around $300.00 to $500.00 (Police Equipment Worldwide, 2006).

In the private sector, jacket selection varies tremendously. Current technology has provided an emphasis on motorcycle jackets that can provide protection while still allowing the rider to wear the jacket in a variety of weather conditions. Even mesh jackets (like the Joe Rocket brand Phoenix model) for summer riding have perforated material that allow air to flow freely in and around the material while acting as an armour carrier. These jackets are becoming a popular and effective means of staying cool while staying safe (Joe Rocket, 2006). For police purposes, a jacket like Firstgear's Kenya model would allow warmth in the winter and ventilation in the summer while still providing a better level of protection than no jacket at all. The Kenya model is 100% waterproof and features abrasion-resistant Dynax brand material on the shoulders and elbows. It has a torso ventilation system, storage pockets and a removable liner. The jacket has built in Temperfoam brand armour in the shoulders, elbows and back. The

vent system allows the wearer to unzip vents in the sleeves and the back of the jacket to allow air to flow through the material while riding so the jacket can be worn for protection on warm days. The suggested retail price for the jacket is $264.95 (Firstgear, 2006).

Gloves in the traditional police motorcycle uniform are frequently an option for the rider. It is difficult to find a glove that is able to satisfy the requirements of police motorcyclists due to the fact that there needs to be enough dexterity to allow the officer to use fine motor skills like writing or shooting a handgun, while affording adequate protection. Many agencies currently allow officers to purchase gloves of their choosing and it is an optional accessory. Many officers use Uncle Mike's sport brand gloves or similar types of hand protection. These types of gloves generally retail for about $30.00, are made of lightweight cowhide, and feature Lycra inserts between the fingers for flexibility and fit. They offer some protection from cold and abrasion, but allow the wearer to be able to feel what they touch (Michael's of Oregon, 2006).

The ideal motorcycling glove would have ABS plastic or Kevlar inserts along the back of the hand and fingers and on the inside of the palm for abrasion resistance like the gloves worn by professional motorcycle racers. However, that is impractical for law enforcement purposes. A glove that fits in the middle, offering both a higher level of protection than thin leather, but more dexterity than a racing glove is ideal for police purposes. Chiba Sports, a glove company that has been in business in Germany for 147 years, has a glove called "Digital" that seems to be well suited to dual-purpose work (web bike world, 2006). Chiba's glove combines a carbon fibre insert with closed cell foam padding in the palm for abrasion resistance and shock disbursement. Padding extends up the length of the thumb and to the last joint of the fingers to cover as much area as possible without sacrificing feel. Chiba's glove retails for $39.95 per pair (Chiba Gloves, 2006).

Helmets are one of the most important safety items any motorcyclist can utilize. Some agencies in Texas currently use an open-face helmet that covers the base of the skull is in use to allow officer's to more easily interact with the public without removing the helmet. This type of helmet is known as a "3/4 helmet". The Super Seer S1607 is one such helmet. It is manufactured from fiberglass and Kevlar. The helmet features a three position air ventilation system that allows air to move around the wearer's head inside the helmet. The helmet is certified to Department of Transportation & Snell Memorial Foundation 2000 standards and sells for $325.00 (Super Seer, 2006). DOT and Snell standards are accepted by all police agencies as the minimum standards for helmet use. The two organizations set safety standards for motorcycle helmets in the United States. DOT sets minimum standards that all helmets sold for motorcycling on public streets must meet. The standard is Federal Motor Vehicle Safety Standard 218 (FMVSS 218). The Snell Memorial Foundation is a private not-for-profit organization that sets voluntary standards for motorcycle helmets. Snell standards are higher than that of DOT's minimum standards (SNELL, 2006).

A recent innovation in helmet technology is the "flip-up" chin bar. Until recently, officers had to choose between helmets that would provide full face protection or one that would allow contact without having to remove the helmet. The downside of open face helmets is that they do not provide protection for the face, eyes or mouth. Presently, it is possible to have a helmet that combines both aspects. There are several models of police helmets that are full faced helmets, but have a button on the bottom of the chin bar that allow the entire front of the helmet to be raised to the crown of the helmet, exposing the officers face. This allows the wearer to converse on traffic stops, wipe sweat from the face, or just cool off when they are parked without having to take the entire helmet off. The Shoei Syncrotec is one such helmet. The chin bar can

be lowered over the face to provide protection to the eyes, nose and mouth while riding and even has an optional LED lighting system for increased visibility at night. The helmet retails for between $300.00 and $420.00 (Shoei, 2006).

METHODOLGY

The purpose of this research will be to investigate whether or not the current uniform is too antiquated to provide the optimum level of protection currently available for motorcycle officers. The research will also consider whether or not the utilization of a newer uniform would be safer, while still being financially feasible. It is anticipated that with little or no budgetary impact, motorcycle officer safety levels may be upgraded in order to better protect the motorcycle officer from injury.

The method of inquiry used will be a printed survey consisting of ten questions. The questions will be distributed to a random sampling of police agencies in Texas and shall be designed and intended to demonstrate what types of safety equipment are currently in use in the areas of foot protection, leg protection, torso, arm and hand protection, and helmet style/head protection. Additionally, the survey is intended to consider whether or not weather conditions play a role in the importance of the amount and/or quality of protection used. Finally, the survey will request a brief history of accident related injuries from each department (with a motorcycle unit) and it will allow for opinions to be expressed regarding the level of protection currently in place by the responding agency. The survey will be e-mailed to a grouping of multiple agencies covering the entire North Texas region.

FINDINGS

There were a total of 219 surveys sent out, with 193 agencies belonging to the e-mail group. A total of 37 surveys were returned completed making the response rate 16.89 percent.

Of the 37 surveys returned, eighteen were agencies that have had, currently have, or plan on having motorcycle officers. Of the eighteen respondents, fourteen said they currently have motorcycles, three stated they used to have them and one responded that they planned on having a motorcycle unit soon.

The gathered data showed that some agencies' respondents answered some survey questions with multiple answers. For example, question number five asked, "What type of hand protection do your officers wear?" The answer choices were, "none, cloth gloves, leather gloves- no material added or leather gloves- added materials". Many departments that responded stated that gloves may be comprised of various materials or not worn at all, depending on the individual officer's preference. Some respondents checked all choices that applied. Another area where this was found to be a frequent response was in the area of jackets. Many departments were found to use different jackets for different purposes (i.e. raingear for wet weather and leather for cold weather). Aside from these responses, predictable data was gathered.

The majority of agencies were found to wear ¾ style helmets, leather gloves, riding boots, leather jackets only worn in cold weather, and double layer uniform pants. These answers were expected as these items comprise the traditional uniform for police motorcycle officers. Not only were these items used by the majority of departments responding, but it was found that no surveyed department made use of full face helmets. No surveyed department used any boot except for equestrian riding boots. Regarding jackets, the two types used were found to be leather with no protective padding or synthetic jackets with no protective padding or inserts of any type. Only one agency said that officers wear jackets in all weather conditions, with the rest saying they were only used in cold weather or not worn at all. Finally, all but one responding

agency either used double thickness uniform material or single thickness uniform material for pants. One agency stated they used synthetic pants with inserts.

Only fifteen of the responding agencies answered question number ten on the survey... "Can you give a brief history of accident associated injuries sustained by motorcycle officers in your department including area of injury (i.e. foot, leg, etc.) and severity of injury?" Of that fifteen, eight agencies stated they had experienced injury accidents involving motorcycle officers. These responses included injuries ranging from the death of an officer to minor cuts and scrapes.

Several conclusions can be drawn from these findings, which support the hypothesis of this research. First and foremost, agencies in the north Texas region are not availing themselves to the most current safety equipment on the market, instead opting for a traditional appearance. Next, from the comment section of the questionnaire, one may conclude that the implementation of modern safety equipment could reduce the number or severity of injuries. Interestingly, the agencies surveyed responses regarding injury parallel the Hurt Study. The majority of injuries listed were to the lower legs. For example, the Pantego Police Department reported, "We have had only a couple of training related injuries that were minor in nature to feet and ankles." A member of the Keller Police Department reported, "I believe we've had one broken foot and one broken ankle." According to the Haltom City Police Department, they had incidents of "road rash to the arms, hips and knees" and their "last two crashes were officers laying their bikes down to avoid crashing into cars. Injuries were minor, consisting of a wrist injury on one,an ankle injury on the other, with nothing broken." Additionally, this same survey reflected the confidence they had in training to avoid having an accident with the Prairie Police Department reporting that they "train monthly which" they "attribute to the low number of crashes and

injuries" their "unit has experienced." Finally, the Dallas/Fort Worth Airport DPS agency reported that they suffered, "one death, one severely injured officer and several (at least six) with minor injuries."

One survey came back from the Frisco Police Department that was filled out by an officer who related breaking his shoulder in two places, having his right ring finger cut off, sustaining road rash on an elbow down to the bone, and bruising on both legs. He states that at the time of the accident he was wearing a police jacket designed especially for high visibility, but with no features related to motorcycle safety, shock or abrasion resistance. He stated, "This jacket did not fair well skidding across the pavement." After spending eight days in the hospital, four months on light duty, two surgeries and one lost finger later, the Frisco Police Department has opted to use leather jackets. However, there are still no safety features uniquely purpose built or designed into these jackets.

DISCUSSIONS/CONCLUSIONS

The purpose of this research was to investigate whether or not the current uniform is too antiquated to provide the optimum level of protection currently available for motorcycle officers. The research will also consider whether or not the utilization of a newer uniform would be safer, while still being financially feasible. It was anticipated that with little or no budgetary impact motorcycle officer safety levels could be upgraded in order to better protect the motorcycle officer from injury. This finding was anticipated from the author's observations of current motorcycle apparel and technology versus the dated equipment and pricing of traditional motorcycle officer uniforms.

The survey tool was unable to determine why departments make the choices they make. Whether it is because of fear that the rider would not be recognized as a police officer without a

distinctive uniform, a lack of awareness regarding products available, or simple vanity, this research can not say. However, aspects of each of these reasons hovered in and around the survey sample. For instance, one surveyed agency's officer, as he was turning the survey in to me said, "You know, I would love for my officers to wear better safety gear, but we just can't afford it." Another drawback of this survey is the fact that since no surveyed agency used more modern safety equipment, research regarding qualitative comparisons between the two extremes could not be completed. Nor could injury severity or lack thereof, be compared or contrasted in this study.

Nevertheless, any department that currently houses or is looking into housing a motorcycle officer unit can benefit from this study. This study has demonstrated that with little or no budgetary impact, motorcycle officer safety levels may be upgraded in order to possibly better protect the motorcycle officer from injury. Hopefully, this research will allow for more discussion regarding what a modern police motorcycle officer should look like and give food for thought regarding liabilities and practices currently in place. In the end, there will always be instances where an officer's life may be jeopardized or even lost in the line of duty. That is a risk that every officer is willing to take on a daily basis. However, it is also important and incumbent upon police administrations to seek safer alternatives.

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